



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/653,328	09/02/2003	Tyson R. McGuffin	200208662-1	2964
7590	06/10/2005		EXAMINER	
HEWLETT-PACKARD COMPANY Intellectual Property Administration P.O. Box 272400 Fort Collins, CO 80527-2400				WHITMORE, STACY
			ART UNIT	PAPER NUMBER
			2825	

DATE MAILED: 06/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/653,328	MCGUFFIN ET AL.	
	Examiner Stacy A. Whitmore	Art Unit 2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 02 September 2003.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-9, 11-22 and 24-26 is/are rejected.
- 7) Claim(s) 10 and 23 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 02 September 2003 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    - a) All    b) Some \* c) None of:
      1. Certified copies of the priority documents have been received.
      2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
      3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date. _____.   |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____.                                   |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-7, 12-22, and 24-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Allen (US Patent 6,151,568).
2. As for claims 1-7, 12-22, and 24- 26, Allen discloses he invention as claimed, including a power estimation system, means for, and method, comprising a predetermined power characterization associated with at least one or a plurality of non-conventional circuit types (clock gater) of a circuit design that relates power as a function of output drive load for a given non-conventional circuit [col. 13, line 19 – col. 16, line 8];

a power estimator computes power associated with the at least one non-conventional circuit based on the predetermined characterization and a derived output drive load [col. 13, line 19 – col. 16, line 8];

the characterizations being stored in a library [col. 13, line 19 – col. 16, line 8];

the output load drive being derived employing (parsing) a node capacitance list associated with a given circuit design instance, associated with a plurality of devices that are connected to an output of the at least one (plurality) of non-conventional circuits [col. 13, line 19 – col. 16, line 8];

wherein the power estimator computes power associated with the at least one conventional circuit and adds the power associated with the at least one conventional

circuit to the computed power associated with the at least one non-conventional circuit [col. 13, line 19 – col. 16, line 8];

adding power associated with at least one (plurality) conventional circuits with the power determined by the clock gater calculator to provide total power [col. 13, line 19 – col. 16, line 8];

adding power determined for each of the clock gaters [col. 13, line 19 – col. 16, line 8];

computing power associated with conventional and non-conventional circuits to determine total power [col. 13, line 19 – col. 16, line 8];

analyzing a plurality of circuit design instances, computing a plurality of power estimates associated with the plurality of circuit design instances, and comparing the power estimates to determine an optimal circuit design [col. 13, line 19 – col. 16, line 8]; circuit being a circuit that employs drive fight [col. 15, lines 1-10, circuits that employ buffers read as circuits that employ drive fight].

#### Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Allen (US Patent 6,151,568) in view of Croix (US Patent 6,327,557).

4. As for claim 11, Allen discloses the invention substantially as claimed, including a power estimation system including predetermined characterizations of non-conventional circuits to correlate power as a function of output drive load [col. 13, line 19 – col. 16, line 8].

Allen does not specifically disclose that the predetermined characterizations are SPICE characterizations.

Croix discloses SPICE characterizations for cell operations [col. 1, lines 18-56].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Allen and Croix because using SPICE characterizations in Allen's system would have provided Allen with a tool that is well known for modeling circuit operations and would provide for an efficient and improved tool for modeling circuit operations [col. 1, lines 18-56].

5. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen (US Patent 6,151,568) in view of Jyu (US Patent 5,880,967).

6. As for claims 8-9, Allen discloses the invention substantially as claimed, including the system for power estimation including characterizations relating switching power to power related parameters and switching node capacitance [col. 13, line 19 – col. 16, line 8].

Allen does not specifically disclose [claims 8-9] wherein the power estimator employs predetermined power characterizations that functionally relate switching power and leakage power to power related parameters comprising switching node capacitance, crossover current, and leakage current.

Art Unit: 2825

Jyu discloses [claims 8-9] wherein the power estimator employs predetermined power characterizations that functionally relate switching power and leakage power to power related parameters comprising switching node capacitance, crossover current, and leakage current [col. 8, SPICE characterizations, col. 12, line 53 – col. 13, line 8, the crossover current is the current from Vdd and ground].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Allen and Jyu because utilizing characterizations of Jyu such as the crossover current, leakage current would have provided Allen with a better and improved power estimation tool because leakage current and crossover current are significant for the purpose of power consumption calculation and would therefore have improved Allen's power estimation system.

7. Claims 10 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to disclose either singularly or in combination the invention as claimed, including [claim 10] wherein the switching power being computed employing a predetermined activity factor list and a node capacitance list associated with the at least one conventional circuit, the crossover power being computed employing predetermined crossover current equations and respective device gate widths, input voltage slopes and capacitive load parameters associated with a channel connected region associated with the at least one conventional circuit, and the leakage power being computed employing at least one predetermined leakage coefficient and the transistor gate area associated with the at least one conventional circuit; [claim 23] computing at least one switching power related parameter associated with conventional circuits based on a first set of circuit design characteristics and a first predetermined characterization of switching power related parameters as a function of the first set of

circuit design characteristics; computing at least one leakage power parameter associated with conventional circuits based on a second set of circuit design characteristics and a predetermined characterization of leakage power related parameters as a function of the second set of circuit design characteristics; and computing power associated with conventional circuits employing the at least one switching power related parameter and the at least one leakage power related parameter.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stacy A. Whitmore whose telephone number is (571) 272-1685. The examiner can normally be reached on Monday-Thursday, alternate Friday 6:30am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stacy A Whitmore  
Primary Examiner  
Art Unit 2825

SAW  
June 9, 2005

